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Nexus between Insurance Industry Investments and Economic Growth in Kenya

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Abstract

Rapid economic growth often boosts revenues, balances fiscal deficits, and improves living standards through technological advancement and a healthy business environment. While banking is widely recognized as a driver of demand-driven growth, the insurance industry, a key part of the financial sector, also plays a crucial role. Insurance penetration the ratio of premiums to GDP reflects its economic contribution. In Kenya, penetration rose slightly in 2022 to 2.3%, still below the global average of 7.2% and ranking third in sub-Saharan Africa. Despite low penetration and a five-year decline, insurance investments grew at 13.3% in 2022, with the sector ranking as the third-largest investor in government domestic debt (7.2%) after banks and pension funds. This study examined how insurance investments affect Kenya's GDP, focusing on investment properties, government securities, and policy loans. Anchored on endogenous growth theory, it adopted a non-experimental design using secondary data from 2012–2023 sourced from the Insurance Regulatory Authority, World Development Index, Kenya National Bureau of Statistics, and the Central Bank of Kenya. Data was analyzed in EViews, applying diagnostic tests and a Vector Error Correction Model (VECM). Findings showed that government securities significantly stimulate short-term economic growth but have negligible long-term effects. Investment properties have the strongest positive impact on long-term GDP expansion. Policy loans significantly enhance GDP growth in the short term but are statistically insignificant in the long run, with potential indirect benefits through household consumption or informal sector investments. The study recommends that insurers diversify portfolios, reduce reliance on government bonds, and increase allocations to high-return productive assets like real estate. Policy loans should be managed cautiously, balancing returns and risk, to enhance their economic contribution. This diversification could strengthen the sector's role in driving sustainable economic growth.

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Keywords; *Insurance Industry Investments, Economic growth***,** government securities, *investment properties and policy loans*

1.0 Introduction

Economic development, measured through macroeconomic indicators like GDP, reflects the progressive expansion of a nation's productive capacity (Alina, 2012). Global GDP grew by 2.9% in 2019 but contracted by 3.3% in 2020 due to COVID-19, rebounding to 5.8% in 2021 before slowing to a projected 3.6% by 2023 (World Bank, 2021; IMF, 2022). Long-term forecasts predict GDP could reach USD 165 trillion by 2050 (Wood Mackenzie, 2022). Rapid economic growth often boosts revenues, fostering balanced economies when fiscal deficits are well-managed (Sibindi & Godi, 2014). While banking is a recognized growth driver, insurance also plays a crucial role in mobilizing savings, protecting welfare and property, providing compensation, and investing in diverse assets, functioning as both a complement and substitute for banking (Sajid et al., 2017; Zouhaier, 2014; IRA, 2022).

According to the Iowa Insurance Institute (2023), insurance enables businesses to undertake higher-return activities by providing a safety net against potential risks, with companies collecting premiums in exchange for coverage. These premiums are invested in diversified portfolios—often favoring low-risk government securities like treasury bonds and bills—while also extending to stocks, mortgages, loans, investment properties, and term deposits, generating additional income and boosting profitability. Globally, insurance investments significantly contribute to GDP, accounting for 2.9% in 2021, down from 3.1% in 2020 but up from 2.8% in 2019 (Insurance Information Institute, 2022). The sector generates approximately 7.1% of global GDP through USD 6.8 trillion in premiums (Jiménez, 2022), with notable national contributions such as 7.6% in the U.S. (Ychart, 2023), 2.9% in China, 4.3% in Japan, and 4.2% in India (Statista, 2023; Financial Express, 2021).

Across Africa, the insurance sector mobilizes domestic resources and channels them into long-term investments, yet its overall growth and economic impact remain modest. In 2022, the market was valued at USD 81.6 billion and is projected to double by 2028, growing at 7.1% annually (Imarc, 2023). The sector contributes about 1% to Africa's GDP, with Nigeria at 1.1%, South Africa at 60.14%, and Egypt at 2.9% (Trading Economics, 2020; Anis, 2021). In Kenya, 56 insurers operate, with general insurance comprising 56.4% of premiums in 2022. Despite a 6.6% GDP asset footprint in 2019, insurance penetration has steadily declined from 2.93% in 2014 to 2.29% in 2022 (IRA, 2019; 2022). This contraction threatens economic growth, as insurance fosters development by mitigating losses, enabling risk-taking, and enhancing financial intermediation.

Although the insurance sector significantly contributes to economic development, most analyses by industry experts and scholars have not differentiated the roles of specific investment portfolios within the industry (Mutemi, 2020; Peleckienė et al., 2019; Shennaev, 2020). Prior studies have tended to measure its economic influence by examining its overall share of the national GDP, rather than assessing the distinct contributions of different investment components (Sibindi & Godi, 2014). This leaves a gap in understanding the impact of specific insurance investments on economic growth. Post-COVID-19, the sector rebounded strongly, with profits growing by 41.6% and net claims increasing by 4.33% (AKI, 2022). Between 2021 and 2022, investment income rose

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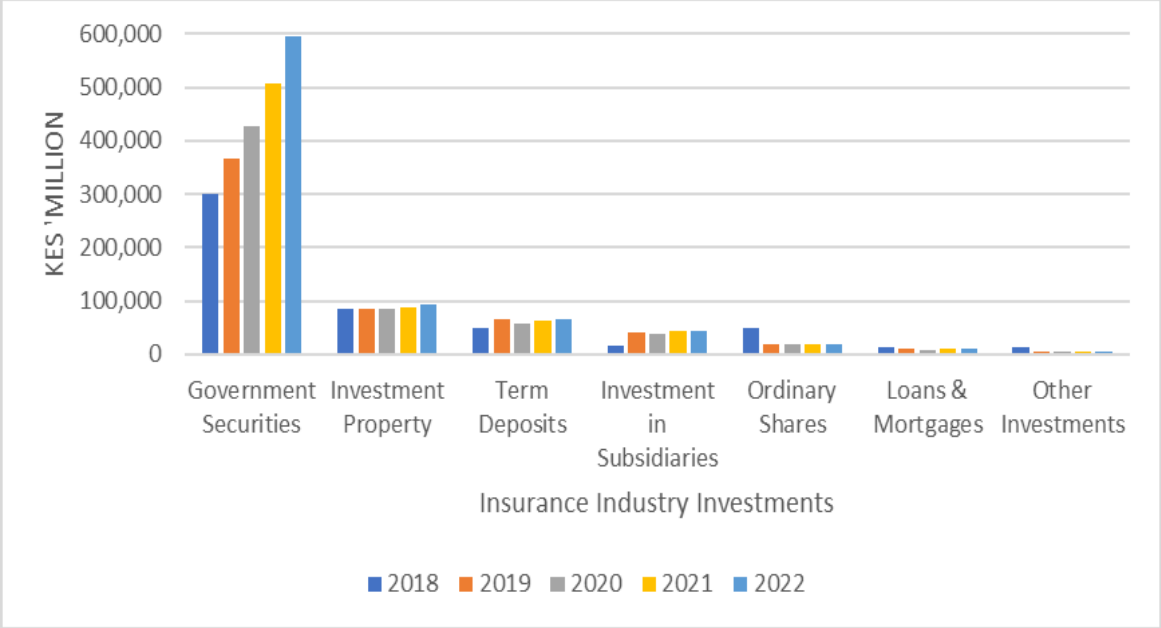
from KSh 63.0 billion to KSh 64.2 billion, largely due to higher returns on government securities (CBK, 2023).

Insurance Investments refers to various asset classes of insurance industry's investment portfolio held at a specific period to generate income and support honoring of obligations. The investment portfolio could be comprised of bonds, term deposits, loans, mortgages and investment properties. Moreover, there is a mandate which directs companies that offer life insurance to invest at least half of their managed assets in approved funds such as government credit facilities. (Canara, 2020). According to Balaban (2014), insurance industry investment includes bonds, shares, real estate among other investment portfolio. Wolski and Zaleczna (2011) identified investment properties as one form of insurance industry investment though it indicated negative correlations and profitability among insurance companies in Poland. In another study, Abbas and Christensen (2010) identified government securities as a collateral in interbank lending markets and as a key tool for executing indirect monetary policy and playing a vital role in financial system operations.

In Kenya, the insurance industry invests in the economy through varied industry channels of investment that include government securities, investment property, term deposits, ordinary shares, investment in subsidiary, loan and mortgages (IRA, 202). As for 2021, an estimated KES 733.46 billion (86.2percent) of total assets was held in investments with government securities accounting for the largest share of investments at 69.0percent of the total investments (IRA, 2022). Figure 1 shows the insurance industry investment in Kenya from 2018 to 2022.

Figure 1: *Insurance industry investment in Kenya*



Source: IRA reports

Figure 1 shows the insurance industry investments in Kenya comprising of government securities, investment property, terms of deposits, ordinary shares, investment in subsidiary, loans and mortgages and other investments in the sector. As shown in the figure above, government securities form the robust forms of insurance sector investments followed by investment property, terms of deposits and ordinary shares. There is also substantial insurance industry investment in

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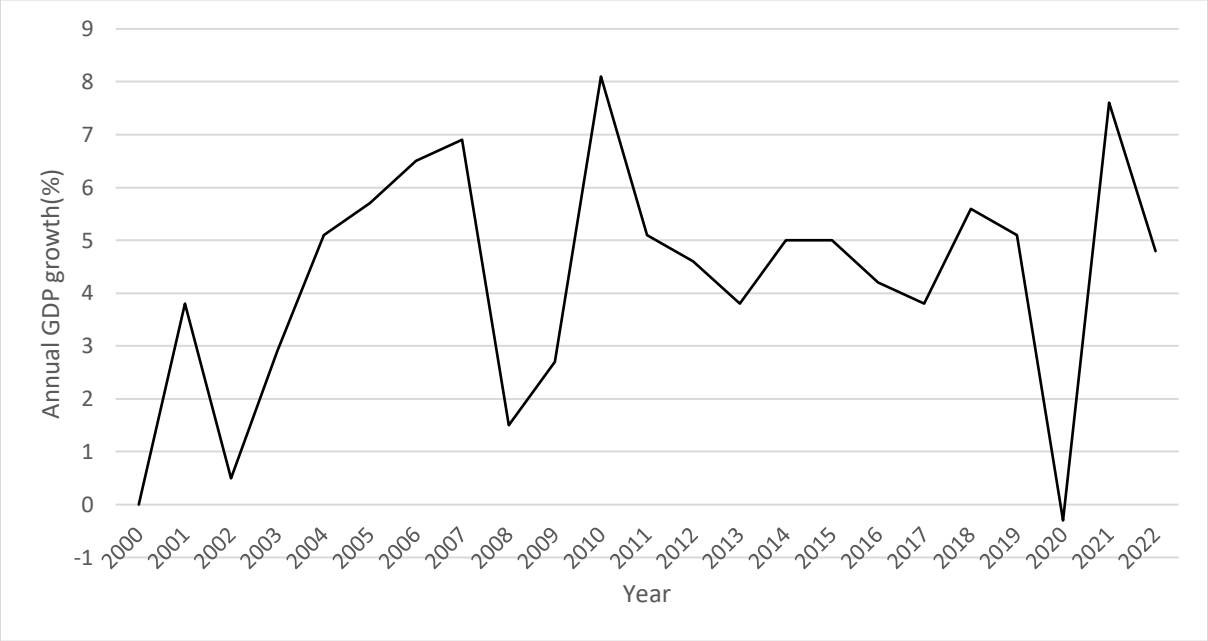
portfolio assets in ordinary shares, loans and mortgages and investment in subsidiary. Although these insurance industry investments significantly contribute to the economy, their specific influence on national economic growth remains underexplored in existing literature. It is not evident through empirical literature to identify how and to what extent the insurance investments assets influence economic growth, an indication of both methodological and conceptual gap. Figure 2 depicts economic growth in Kenya from 2000-2022.

Figure 2: *Economic Growth in Kenya*



Source: CBK 2023

Figure 2 Kenya's economic performance has shown variability over time, with periods of both growth and slowdown. In the periods of 2000-2001, the economic growth was barely below 3 percent before plunging to 0.5 percent in 2002. The decline was attributed to elections that were occurring during that period. Substantial economic growth was recorded in the subsequent years after 2003 which was attributed to favourable investment environment and political stability. This growth however, was undermined again by political instability that was witnessed in 2008. Over the subsequent years, the country's economic performance has experienced both periods of expansion and contraction. Kenya recorded lowest economic growth in 2020, a phenomenon that was attributed to Covid-19 pandemic. Though the economy of a country is an amalgamation of various industries and institutions, impact investments from the insurance sector on a nation's economic development has received minimal attention in academic literature.

Insurance companies collect premiums from policyholders, which become liabilities payable in the future, and prudently invest these funds in assets such as government securities, real estate, term deposits, ordinary shares, subsidiaries, and policy loans (IRA, 2021, 2022). Investments in government securities inject capital into various sectors, stimulating economic growth, while real estate investments generate employment and rental income, as seen with Britam's iconic building

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(Cytonn, 2023; Pam Golding Properties Kenya, 2023). Policy loans offer policyholders an alternative to bank credit, secured by the policy's cash surrender value, and often come with lower interest rates since they are unregulated by the Central Bank of Kenya. These loans gained popularity during and after the COVID-19 pandemic, growing by 7% to KSh 6.5 billion in 2023 (IRA, 2024), helping policyholders address financial needs without lapsing their coverage while minimizing insurers' credit risk.

Although insurance companies engage in diverse investments, limited research has examined the combined impact of policy loans, investment properties, and government securities on economic growth (Center for Capital Markets Competitiveness, 2019; Gründl & Gal, 2017; Kibanga, 2019; Weisbart, 2018). Existing studies have explored the relationship between insurance sector development and economic growth, but findings are inconsistent. For instance, Sajid, Angappan, and Arpah (2017) and Peleckienė et al. (2019) reported a strong positive correlation, while evidence from Austria indicated a negative association, revealing a contextual gap. Additionally, Mladenka (2019) found that regulations, tax policies, and collateral rules shape asset allocation, yet did not address the three specific investment types highlighting a conceptual gap. This study therefore seeks to evaluate how insurance sector investments in government securities, real estate, and policy loans contribute to Kenya's economic growth, aiming to provide a more comprehensive understanding of their combined influence.

1.1 Statement of the Problem

Insurance investment plays a dual role of risk transfer enhancing indemnity and financial intermediation, both critical to fostering economic growth. Theory and empirical studies suggest that insurance beneficiaries inject premiums into the real economy and financial markets, stimulating GDP growth through spending transmission mechanisms. Simultaneously, insurance firms finance government spending via debt and equity instruments, directly boosting economic growth. As financial intermediaries, insurance firms rank second globally after banks in mobilizing resources for investment. Without risk management mechanisms, risk-averse firms and individuals may limit participation in economic activities, dampening growth.

In Kenya, despite the sector's potential, insurance remains underdeveloped. Over the past decade, GDP growth has averaged 5.5%, below the Kenya Vision 2030 target of 10% per annum. Insurance penetration has been declining since 2014, from 2.93% to 2.25% in 2021 well below the global average of 7.1%. Life assurance penetration also dropped from 1.9% to 1.45%. This trend contradicts literature asserting that higher insurance penetration drives GDP by mitigating large losses, enabling transactions, promoting entrepreneurship, enhancing financial intermediation, and encouraging investments by risk-averse individuals.

Empirical evidence remains mixed. Bayar et al. (2021) examined the effects of various insurance types life, general, and overall market penetration—on national economic growth but did not address how insurance investments in government securities and private properties influence GDP, creating a conceptual gap. Sibindi and Godi (2014) explored cointegration between the insurance industry and economic growth but did not investigate the nature of these relationships through advanced economic models, leading to a methodological gap. Focarelli (2017) analyzed insurance regulation without focusing on specific investment channels. This study therefore aims to bridge

these gaps by examining how insurance investments in government securities, private properties, and policy loans contribute to Kenya's economic growth

2.0 Literature Review

The section examined theoretical literature review where the study demonstrated how various concepts in theories are applicable in the study and subsequently forming the foundation. In addition, the investigation reviewed recent studies to explore how variables under investigation relate and measured.

2.1 Theoretical Review

The endogenous growth model anchored the study. The concept is based on understanding of the mechanism behind enduring growth that is occasioned by economic activities. The evolvement of this theory is credited to Barro (1990) who argued that internal forces within an economy is key in enhancing growth especially those that govern opportunities and create incentives which facilitate technological knowledge. This theory borrows much from Cobb Douglas function which attribute increased growth to efficient use of technology.

A key assumption is that government is the sole provider of goods and services. Thus it becomes imperative for the interaction of government policies and technology to sustain growth. Therefore, technology is assumed to be the difference that induces growth in an economy. The theory also assumes that returns are constant where a unit application of technology will result to a unit increase in growth. According to Romer (1986) investments in private sector creates externalities that results to positive growth that is attached to capital accumulation which result to increased returns. This implicitly creates long term growth that is positive. The value of this approach is in its ability to explain insights on to how growth in the long-term can be achieved. Technology and capital are the main factors for economic expansion. Insurance industry avails capital that can be accumulated in various aspects to generate sustained growth in the economy.

2.2 Empirical Review

Bayar et al. (2021) examined how the insurance industry influenced economic development in Macedonia from 1950–2010 using a multiple regression model. They analyzed extended-term, short-term, and total coverage penetration, finding that not all forms of insurance investment contribute positively to economic growth. Akinlo and Apanisile (2014) explored insurance's impact on Sub-Saharan Africa's economy (1960–2011) using GMM, Fixed Effects, and Pooled OLS models. They concluded that insurance supports economic expansion by channeling premium funds toward government securities and real estate. Sibindi and Godi (2014) studied the Johannesburg Stock Exchange-listed insurers (1990–2012) using cointegration and a VECM model, finding that long-term and total insurance lead to economic changes through stable long-run relationships. These studies collectively reveal that the economic benefits of insurance depend on both the type of coverage and the channels through which investments are allocated.

Akpan and Emem (2017) investigated how insurers' and commercial banks' investment portfolios influenced Nigeria's economy (1966–2011) using a simple linear regression model. They found a positive, though not statistically significant, relationship between bonds, loans, government securities, and economic growth. Focarelli (2017) used descriptive analysis of European markets to highlight insurance as a growth catalyst through financial risk management. Mohyul din et al.

(2017) studied the US, UK, Malaysia, China, India, and Pakistan (1980–2015) using a panel autoregressive distributed lag model, concluding that life and non-life insurance investments, combined with stock investments and trade openness, significantly boost economic growth over time. Fashagba (2018), using Nigerian Central Bank data and OLS, found that funds from insurance invested in stocks, government securities, and properties yield economic benefits. These findings show the dual role of insurance as both a direct financial contributor and a stabilizing economic instrument.

Peleckienė et al. (2019) analyzed European markets (2004–2015) using descriptive statistics and econometrics, finding that the impact of insurance on economic growth depends on a country's economic stability. Advanced economies with low insurance penetration showed weaker links. Causality tests revealed mixed patterns sometimes GDP influenced insurer investments, and other times the reverse or a bidirectional relationship existed. Phutkaradze (2018) studied 10 European countries (2000–2012) post-COVID-19, finding that increases in insurance investment did not significantly contribute to economic growth. Asongu and Odhiambo (2020) examined 48 African countries (2004–2014), concluding that long-term insurance enhances economic growth, while non-life insurance's contribution is minimal. These studies demonstrate that while insurance can be a driver of growth, its effects vary across regions and insurance types, influenced by broader macroeconomic conditions and market penetration levels.

Apergis and Poufinas (2020) analyzed 27 OECD countries (2000–2016) using advanced unit root tests, finding that insurance penetration and gross premiums positively affect economic growth. They also highlighted the reinforcing effects of capital investment, government spending, education, foreign direct investment, trade liberalization, and financial sector development. Prokopjeva et al. (2020) examined the Russian market using descriptive analysis, concluding that insurance's growth impact depends on regulatory frameworks restrictive regulations can slow both insurance development and overall economic progress. Theuri (2021) analyzed secondary data from 37 Kenyan general insurers (2013–2019) and found that investments in treasury instruments, shares, properties, and liquid vehicles improved economic growth through higher returns on equity. Together, these studies emphasize that insurance fosters growth when paired with enabling policies, sound regulation, and strategic investment choices.

Anis (2021) studied Kenya's capital market, insurance, and mortgage sectors (2005–2019) using a VAR model, finding that credit distribution to government and private entities significantly impacted economic performance, though treasury bonds showed no such effect. Bayar et al. (2021) assessed 14 Eastern European nations (1998–2016), finding no direct causal link between insurance sector changes and national economic performance. Finally, Baruti (2022) analyzed Kosovo's insurance sector using mixed methods and stratified sampling, concluding that insurance enhances growth by spreading risk, providing investment capital, and offering indemnity. These findings highlight regional variations, where insurance can be an essential growth driver in some contexts, yet display limited or statistically insignificant effects in others often depending on the nature of investments, regulatory climate, and the maturity of the financial system.

As indicated above, previous studies examining the relationship between insurance and economic growth have drawn on neoclassical and Barro models, with works such as Phutkaradze (2018), Mohyul din et al. (2017), and Kondrat et al. (2019) applying these frameworks to explain growth patterns. The Financial Intermediation Theory has also been widely adopted, viewing insurance as a financial intermediary that pools resources from many entities and channels them into

investments yielding higher returns, thereby stimulating growth. This study employs the Solow growth model to explain how growth occurs and the factors influencing it. Much of the empirical evidence such as that from Phutkaradze (2018), Mohyul din et al. (2017), Baruti (2022), Fashagba (2018), Sibindi and Godi (2014), and Asongu and Odhiambo (2020)—has focused on regional or developed markets, creating a contextual gap given Kenya's less mature insurance sector and policy limitations. Earlier Kenyan-focused studies, such as Theuri (2021) on insurer investment choices and Anis (2021) on insurance and mortgage sectors, examined pre-COVID periods with shorter timeframes. In contrast, the current study covers 2012–2023, including post-COVID trends, when investment in government securities significantly increased, thereby providing fresh insights into the evolving role of insurance investments in Kenya's economic growth.

3.0 Methodology

This research aims to investigate how insurance influences economic growth. The research was conducted using a design that excluded experimental manipulation on effect of insurance sector investments on growth of Kenya's economy from 2012 to 2023. The main objectives of descriptive designs are describing phenomena or characteristics related to a population, an estimate of the population that exhibit these characteristics and discovery of relations among variables (Cooper & Schindler, 2018). To explore the relationship between insurance investment and economic progress, the study utilized endogenous growth model that is based on constant returns on scale. According to this theory, the production function is expressed as;

$Y=AK^aH^bL^{1-a-b}$ …….……..1

Where Y is output, K is capital stock, A is output elasticity, H is technology and L is labor. The equation was converted to per capita

$DY/DL=A*K^a/DL*H^b/DL*L^{1-a-b}/DL$……..2

Further transformation of the equation into more simplified and critical are;

$Y^*=AK^{*a}H^{*b}$ …….3

Further transformation of equation 3 by decomposing through taking natural logs and differentiating the equation as follows;

$\Delta Ln(Y^*) =Ln (A) +a (K^*) +b (H^*)$……...….4

To bring in the insurance investment into equation 4 K* is decomposed as proposed by Fashagba, (2018) and Akinlo, and Apanisile, (2014). According to the above scholars, insurance investments into the economy can be through government bonds and investment properties. The conversion of capital can be presented in the following equation

$\Delta Ln (K)^*=aGov+ (K^*_{p)}$.....5

Equation 5 is incorporated into equation 4

$\Delta Ln (Y^*) =Ln (A) +aGov+ (K^*_{p)} + b (H^*)$……6

Where Gov is government bonds and K^*_p is investment properties

While deriving the theoretical model using endogenous growth theory, there are other factors that influence growth and they include savings, life expectancy and interest rates (Prettner, 2013). These factors largely influence insurance sector and thus affect economic growth. It is imperative

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to include the variables in the model so that comprehensive variation in the dependent variable can be explained (Haiss&Sümegi, 2008).

Savings of an individual and life assurance cannot be directly linked to explaining economic growth (Chakraborty, 2004). This implies that an increase in savings may not necessarily impact the life assurance but progressive savings may translate to increase in the enduring growth trends. Alternatively, interest rates are perceived as supplementary costs linked to insurance products (Schmeiser, &Wagner, 2015). However, the relationship of interest rate and life assurance remains inconclusive (Liu, et al. 2020). Moreover, many scholars have attributed low growth recorded in emerging economies is as a result of high interest rates. While adopting overlapping-generations model of endogenous growth Finlay, (2006) and Cipriani, and Fioroni, (2021) demonstrated that over the long term, economic performance can be linked to changes in population longevity. This imply that life expectancy can determine growth where young person is attached or projected to high economic growth while individual with advanced age is associated with declined economic growth (Coale, & Hoover, 2015). In addition, average life expectancy affect growth positively in economies with low life expectancy. Based on this argument the model can be presented as;

$$Y=f(A, K^*_p, H^*, Gov) \quad \ldots\ldots 7$$

The equation 7 can be decomposed into an econometric equation as follows;

$$\Delta LnY_t^* = a_0 + a_1 (Gov)_t + a_2 (K^*)_t + a_3 (H^*)_t + a_4 PL_t + a_5 INt + a_6 ST_t + E_t \quad \ldots\ldots 8$$

The above denoted of government bonds investments, investment properties, physical labour investment, policy loans, interest rate and savings rates. Table 1 shows variable measurement, description and data sources.

Table 1: *Definition and Measurement of Variables*

Variable	Notation	Definition	Measurement	Source
Real GDP (Log)	Y	It denotes the cumulative economic output of a nation, encompassing all goods and services produced within a defined time span and its value is adjusted to inflation.	Log of gross domestic product obtained by expressing log of gross domestic output to consumer price index as a ratio.	KNBS, World Bank
Government bonds	Gov	This is a financing model designed by government through debt to investors as way of raising funds and in most cases is defined by time on servicing.	Given by log of total government bonds investments from insurance industry valued in Kenya shillings	CBK
Investment properties	K^*_p	These are properties owned or purchased primarily for getting returns in form income, interest, rent or capital appreciation.	Given log of total investment on properties from insurance industry valued in Kenya shillings	IRA

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Policy loans	PL	These are loans taken by owners of life assurance policy and using their life assurance policy as security in case of default.	Log of total loans issues in KES in the insurance sector	IRA and CBK
Physical Labour investment	H*	This is allocation of resources on individual abilities and expertise with a view of adding more value on it.	Log of government investment on education	WDI
Interest rate	IN	The cost of leasing capital expressed as proportion and in most cases in a percentage form.	This is proxied by log of 91-day treasury bills valued in Kenya shillings	CBK
Saving Rate	ST	This is the proportion of household income that is set aside from consumption and other form of expenditure primarily devoted to investment.	Log of gross household savings valued in Kenya shillings	CBK

Quarterly sourced data from published sources spanning from 2012-2023 was employed. The study obtained data on GDP output, insurance investment on government bonds, policy loans, physical labour investment, interest rate and savings. The raw data was converted to natural logs. The conversion into logs is to transform data with large numbers into standard numbers which mitigated skewness problem and possible outliers in the data set. Presence of outliers in data set can cause non constancy of variance of an error term which may affect OLS estimates negatively. Data was obtained from CBK, WDI, IRA, KNBS and World Bank.

Before model estimation, the study conducted a series of pre-estimation tests to ensure the validity of the time series analysis. Stationarity was assessed using the Augmented Dickey-Fuller (ADF) test, where a p-value below 0.05 indicated stationarity, while non-stationary series underwent differencing until stationarity was achieved. Cointegration testing was then applied to determine if non-stationary variables shared a long-run equilibrium relationship. The Johansen cointegration method was used, with a p-value below 0.05 confirming cointegration. The integration order of variables guided model selection: if variables were integrated of order two or more, the Vector Error Correction Model (VECM) was applied; otherwise, the Vector Autoregressive (VAR) model was used. These tests ensured that both short-term fluctuations and long-term relationships were captured without violating statistical assumptions, thereby safeguarding the reliability of parameter estimates.

The study applied descriptive statistics (mean, minimum, maximum, standard deviation) alongside inferential analysis. Depending on integration levels, the Autoregressive Distributed Lag (ARDL) model was used for variables integrated at I(0) and I(1), ensuring robustness to endogeneity, while stationary series were estimated using OLS. ARDL bounds testing (Pesaran et al., 1999, 2001) facilitated identification of long-run relationships, with the model reformulated into an Error Correction Model to incorporate short-run dynamics. The Autoregressive Integrated Moving Average (ARIMA) was also applied for forecasting. Post-estimation diagnostics included the Jarque-Bera test for normality, the Breusch-Godfrey LM test for serial correlation, and the

Breusch-Pagan/Godfrey test for heteroscedasticity. Violations were addressed using Feasible Generalized Least Squares (FGLS) where necessary. These steps ensured the final models were statistically sound, unbiased, and robust for policy-relevant interpretation.

4.0 Findings and Discussion

The chapter assessed the relationship of insurance industry investments on economic growth using statistical tools such as descriptive and inferential statistics. Summary statistics were used to present the underlying structure and distribution of the dataset and this allowed the researcher to explore the data and identify any possible anomalies such as outliers in the data.

4.1 Descriptive Results

Descriptive statistics serve as a foundational tool for evaluating the influence of insurance investment on economic growth. Descriptive statistics summarized data using mean, standard deviation, minimum and maximum. The statistics helped to reveal the average level of investment, typical growth rates and significant fluctuation in the data set. This staged a foundation for further econometrics modelling and ultimately aiding strength and direction of relationship and the results in the Table 2.

Table 2: *Descriptive Statistic Findings*

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP Growth	44	4.92	2.50	-4.10	10.30
Government bonds in million KES	44	252,000	148,000	3,650	524,000
Investment properties in million KES	44	42,600	11,600	1,390	63,900
Policy loans in million KES	44	8,160	3,160	218	19,900
Interest Rate	44	15.00	3.06	12.02	26.00
Saving Rate	44	4.49	2.27	1.15	9.72

During the study period, GDP growth averaged 4.92% with a standard deviation of 2.5%, reflecting moderate expansion but notable fluctuations, ranging from -4.1% (contraction) to 10.3% (strong growth). Government bonds held by insurers averaged KES 252 billion, with high variability (SD 148 billion) due to shifts in government borrowing, interest rates, and investment strategies. Investment properties averaged KES 42.6 billion with lower variability (SD 11.6 billion), indicating stability and long-term asset growth strategies, influenced by regulation and real estate illiquidity. Policy loans averaged KES 8.16 billion with moderate variability (SD 3.16 billion), shaped by life insurance growth and policyholder liquidity needs. Interest rates averaged 15% (SD 3.06%), with peaks near 26% affecting investment returns and economic growth. Savings rates averaged 4.49% (SD 2.27%), fluctuating between 1.15% and 9.72%, influencing insurance penetration and capital formation. Overall, variability in investments and macroeconomic variables underscores the influence of economic conditions and regulation, with government bonds and policy loans being more dynamic, property investments stable, and interest and savings rates shaping both insurer investment capacity and economic growth.

4.2 Time Series Properties

Checking of time series data is necessary to avoid spurious relationship between variables. Unit root test is a credible technique undertaken to check time series data particularly their stationarity status. A combination of non-stationary and stationary data require specific type of technique to ensure that appropriate modelling is undertaken. To evaluate whether the time series data was stationary, the Augmented Dickey-Fuller test was applied. The adoption of ADF is the most appropriate for homoscedastic and uncorrelated errors (Herranz, 2017). The study tested whether the data had a unit root, assuming it did under the null hypothesis and that it was stationary under the alternative. The decision rule to either reject or accept null hypothesis was determined by the p values generated that is if p values produced is less than 0.05 then reject null hypothesis and conclude the data set is stationary and the converse is also true. The result of the research is presented in Table 3 of Unit level.

Table 3: *Unit Results*

Variable	Integration Order	Test Statistics	5 % Critical Value	Status
GDP Growth – (Level)	I(1)	-2.859	-2.958	Non-stationary
GDP Growth - I(1)	I(0)	-5.289	-2.961	Stationary
Government bonds	I(0)	-4.237	-2.958	Stationary
Investment properties	I(0)	-6.482	-2.958	Stationary
Policy loans	I(0)	-4.382	-2.958	Stationary
Interest Rate	I(0)	-3.422	-2.958	Stationary
Saving Rate	I(0)	-5.147	-2.958	Stationary

The finding of the ADF computation as indicated in Table 3 show that all the variables except economic growth are stationary. The variables of government bonds, investment properties, policy loans, interest and saving rates are found to be stationary, indicating they are integrated of order zero. The first difference of non-stationary variable that is GDP growth was generated. The unit test on the first difference of GDP growth indicated that it was stationary and thus further analysis can be undertaken.

4.3 Model Estimation: Effect of Insurance Industry Investments on Economic Growth in Kenya

The study employed ARDL-ECM to determine the relationship of the study variables. Before running ARDL-ECM it is essential to explore the long-term relationship of the study variables. Cointegration test is an econometric tool employed in testing a long-term relationship of variables. It is important to establish the relationship of the study variables to avoid spurious relationship through cointegration techniques. In this study, ARDL bound cointegration test was employed. If at all the variables were found to be integrated at order two and above, the vector error correction (VEC) model will be estimated and if it is of order 0 and I then ARDL-ECM was the most appropriate model to determine the relationship of the study variables. Table 4 shows the Cointegration results.

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Table 4: *Cointegration Results*

Sample: 2014Q3 - 2023Q4		
Included observations: 38		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	5.434825	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

The ARDL Bounds Test result shows an F-statistic of 5.434825, which exceeds the upper critical bounds at all conventional significance levels (1%, 2.5%, 5%, and 10%). This indicates strong evidence against the null hypothesis of no long-run relationship among the variables. Therefore, we conclude that a stable long-run equilibrium relationship exists between the dependent variable and its regressors over the sample period. The presence of cointegration implies that any short-term deviations from this equilibrium are likely to be corrected over time. Consequently, it is appropriate to proceed with estimating both the long-run coefficients and the error correction model.

The cointegration analysis established presence of long-term relationship between the variables. There is need to undertake VECM to establish the speed of adjustment to equilibrium on the effect of insurance investments on economic growth. The study used AIC to determine the minimum number of lags required to establish the short- and long-term effect of insurance industry investments on economic growth. The study used initial lag length of 4, ARDL-ECM Model (2, 1, 3, 2, and 0). The model also provided the significance of each lags of each variable under estimation. The finding is presented in table 5.

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Table 5: *Effect of Insurance Investment on Economic Growth*

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Significance
D(GDP(-1))	0.226924	0.174207	1.302614	0.2193	
D(GDP(-2))	0.290768	0.148842	1.95354	0.0767	*
D(GDP(-3))	0.305171	0.125689	2.427975	0.0335	**
D(IN)	0.155979	0.264611	0.589465	0.5675	
D(IN (-1))	-1.05076	0.265293	-3.960754	0.0022	***
D(IN (-2))	0.002079	0.179699	0.011569	0.991	
D(IN (-3))	0.752498	0.172961	4.350693	0.0012	***
D(GOV)	0.524839	0.546661	0.960082	0.3576	
D(IN(-1))	1.118717	0.488978	2.287869	0.0429	**
D(GOV (-2))	0.792573	0.380736	2.081689	0.0615	*
D(GOV (-3))	0.234572	0.235151	0.997537	0.3399	
D(K^*_p)	0.51328	0.230199	2.229717	0.0475	**
D(K^*_p T(-1))	-0.692881	0.526408	-1.316243	0.2149	
D(K^*_p (-2))	-2.236104	0.605178	-3.694954	0.0035	***
D(PL)	0.06017	0.324833	0.185232	0.8564	
D(PL(-1))	-0.713223	0.253962	-2.808388	0.017	**
D(PL(-2))	0.173068	0.131255	1.318562	0.2141	
D(PL(-3))	0.505484	0.150883	3.350183	0.0065	***
D(SV)	-0.060145	0.107997	-0.556917	0.5887	
D(SV (-1))	-0.213574	0.10629	-2.009344	0.0697	*
D(SV (-2))	-0.255982	0.086404	-2.962631	0.0129	**
D(SV(-3))	-0.220469	0.075634	-2.914938	0.0141	**
CointEq(-1)	-0.950963	0.193392	-4.917292	0.0005	***
Long Run Coefficients					
Interest rate	0.551223	0.276969	1.990199	0.072	*
Government securities	-0.405885	0.518902	-0.782201	0.4506	
Investment properties	3.325091	0.919385	3.616649	0.0041	**
Policy loans	-0.561684	0.38684	-1.451981	0.1744	
Saving Rate	0.416472	0.207758	2.004606	0.0702	*
C	-62.234943	20.666218	-3.011434	0.0118	**

Significance codes: *** p<0.01, **p<0.05, * p<0.1

Cointeq = GDP - (0.5512*IN -0.4059*GOV + 3.3251* K^*_p -0.5617*PL + 0.4165*SV -62.2349)

During the study period, Kenya's GDP growth averaged 4.92%, suggesting a moderately expanding economy. However, the standard deviation of 2.5% highlights notable year-to-year

fluctuations in economic performance. The minimum recorded growth rate of -4.1% reflects periods of economic contraction, likely linked to adverse shocks such as political instability, global crises, or domestic policy disruptions. Conversely, the maximum growth rate of 10.3% points to periods of strong economic expansion driven by favorable market conditions, investment inflows, or policy reforms. This wide variation between the highest and lowest growth rates indicates that the Kenyan economy experienced both significant downturns and growth spurts during the period under review. Such volatility in GDP performance has important implications for insurance sector investment patterns, as periods of high growth tend to stimulate demand for insurance products, while contractions can suppress premium collections and investment capacity.

Government bonds, representing insurer investments in public debt instruments, recorded an average value of KES 252 billion, with a notably high standard deviation of KES 148 billion. This substantial variability indicates that insurers' allocations to government securities shifted significantly over time. The minimum recorded investment of KES 3.65 billion contrasts sharply with the maximum of KES 524 billion, underscoring the wide disparity in levels of commitment to this asset class. Such fluctuations may be attributed to changes in government borrowing behavior, adjustments in interest rate environments, and evolving insurer investment strategies. Periods of high government bond investment could be linked to attractive interest yields, perceived safety of public debt, or macroeconomic uncertainty pushing insurers toward lower-risk instruments. The high standard deviation signals that this investment class was highly responsive to policy changes, macroeconomic shifts, and the broader regulatory environment influencing insurers' portfolio allocations.

Investment properties emerged as a comparatively stable asset class for insurers during the period, averaging KES 42.6 billion with a standard deviation of KES 11.6 billion. This indicates lower volatility relative to government bonds, suggesting that insurers maintained consistent and deliberate exposure to real estate. The minimum investment of KES 1.39 billion and the maximum of KES 63.9 billion reflect a moderate range, with the standard deviation being relatively small in proportion to the mean. This stability is likely due to the long-term strategic nature of real estate investments, the illiquidity of property markets, and regulatory frameworks that may limit speculative or frequent shifts in this category. Real estate's potential for steady capital appreciation and rental income makes it a strategic choice for insurers seeking stable returns. The low variability reinforces the perception that property investments form part of insurers' long-term asset growth and capital preservation strategies.

Policy loans, which are loans extended to policyholders against the surrender value of their insurance policies, recorded an average of KES 8.16 billion with a standard deviation of KES 3.16 billion. Although moderately variable, these loans were less volatile than government bonds, suggesting relative stability in insurer lending to policyholders. The minimum value of KES 218 million and a maximum of KES 19.9 billion indicate fluctuations influenced by growth in life insurance coverage, changing demand for liquidity, and the financial needs of policyholders. Interest rates during the study period averaged 15% with a standard deviation of 3.06%, reflecting a relatively volatile interest rate environment. The peak rate of about 26% signals periods of monetary tightening, inflation control, or policy interventions, while the minimum of 12.02% reflects more accommodative conditions. High interest rates tend to increase returns on fixed-income assets like government bonds, potentially attracting insurer investment, but they can also dampen borrowing and slow economic growth.

The national savings rate averaged 4.49% with a standard deviation of 2.27%, ranging from a low of 1.15% to a high of 9.72%. This variation points to shifting household saving behaviors over time. Low savings rates can constrain domestic capital formation, limit insurance uptake, and increase reliance on foreign investment or government borrowing. Conversely, higher savings rates may enhance insurance penetration, as households with surplus income are more likely to purchase insurance products and engage in long-term investment plans. The descriptive statistics overall reveal that investment behaviors and macroeconomic conditions were dynamic and context-dependent. Government bonds and policy loans displayed high variability, reflecting their sensitivity to external conditions and regulatory factors. In contrast, investment properties provided stability, supporting long-term economic growth. Interest rates and savings rates emerged as critical contextual variables, influencing not only insurer investment decisions but also broader economic performance and insurance market development.

5.0 Conclusion

The Vector Error Correction (VEC) offer meaningful understanding of how different elements of insurance-related investments influence economic growth over time. Firstly, the model indicates that insurance sector investments in government securities have a statistically significant effect on GDP growth in the short term. This suggests that government securities, being low-risk and highly liquid, provide a safe avenue for insurance firms to park surplus funds, which in turn supports short-term fiscal stability and possibly finances immediate public sector spending that stimulates short-term economic activity. In contrast, over the long term, the coefficient associated with government securities is not statistically significant, suggesting that these investments have a limited role in fostering enduring economic expansion. This may be attributed to their conservative nature and limited capacity to drive capital formation or productivity-enhancing ventures over time.

In contrast, insurance investment in properties demonstrates the most substantial and statistically significant long-term impact on GDP growth. Such investments are typically channeled into real estate development, infrastructure, and commercial assets, which directly enhance economic productivity, support employment, and contribute to capital formation over time. Policy loans, meanwhile, exhibit a negative but statistically insignificant effect on long-run GDP growth. Although they may initially reduce insurers' capacity to invest in productive ventures, the redistribution of funds to policyholders could eventually support household consumption or informal sector investments. However, their overall long-run impact remains minimal and inconsistent, offering limited support for growth.

Based on study findings insurance firms are supposed to diversify their asset portfolio and reduce over reliance on government securities as a form of investment and increase allocation on productive assets with desirable returns. Government securities is vital in providing short term liquidity and strategic shift in necessary to support sustained economic growth. Investing in property through insurance has a clear and lasting effect on economic growth. It is recommended that insurance increase their resource allocation on investment in properties such as real estate and private properties class. This involve increasing allocation to investable funds particularly income generating property assets that offer capital appreciation and economic spillovers. Insurers should strengthen internal capacity for property investment analysis and promoting partnership with real estate developers.

Policy loans seems to reduce GDP growth over time, but its effect isn't strong enough to be considered statistical significance, indicating minimal influence on sustained economic performance. Insurance management should adopt cautious and balanced approach in administering these loans. Although, policy loans provide short-term liquidity to policymakers, excessive lending may reduce the pool investable loans limiting the insurer capacity to invest in growth enhancing assets. It is recommended that insurance firms implement stricter underwriting standards and monitor loan-to-surrender value ratios to ensure sustainability. Policymakers should also consider revising investment guidelines to incentivize insurance capital flow into sectors with higher development impact, including affordable housing, industrial parks, and transport infrastructure. Additionally, regulatory frameworks should balance prudential requirements with flexibility to encourage long-term asset investment without compromising financial stability.

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